Year 10: Combined Biology

Curriculum Intent: Year 10 Biology tackles more complex ideas and concepts in the subject. It builds on the key knowledge from years 7,8 and 9 to link together all the areas of the subject. The learning journey goes from the microscopic; looking at cell level systems and processes within cells such as mitosis, through organism and community level systems, to larger scale global issues facing the world of biology. Procedural knowledge and practical skills are developed further, building on experience with microscopy, osmosis and active transport experiments and sampling. The curriculum in year 10 aims to bring everything together so that students have a complete understanding of the Biology aspect of the Combined Science course.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Key ideas and Sequence of Learning	**Module B6 – Global Challenges** • Sampling Techniques. • Loss of Biodiversity • Increasing Biodiversity • Maintaining biodiversity • Revisit natural selection (B5) • Genetic engineering in agriculture • Producing GE organisms • Biotech in farming	**Module 3 – Organism level systems** • Nervous system • Reflexes • Hormones and negative feedback recap • Menstrual cycle • Controlling reproduction • Using hormones to treat infertility • Controlling Blood Sugar levels	**Module B6 – Global Challenges** • Health and disease • Spread of communicable disease • Prevention spread of disease • Human infection • Plant disease • Blood and body defences • Vaccinations • Prevention and treatment of disease • New Medicine	**Module B6 – Global Challenges** • Revisit circulatory system (B2) • Non communicable diseases • Treating cardiovascular disease • Modern advantages in medicine Students will revise for PPEs	Students sit their EoY exams. Students will review their PPE exam papers. Students will revisit topics and complete practical investigations: • Enzymes • Photosynthesis	Recap and reteach: Module 2 – Scaling up • Diffusion, osmosis and active transport • Transport in plants • Transport in animals Module 3 – Organ level systems. • Nervous system • Endocrine system Module 5 – Inheritance and selection. • Natural selection Module 6 – Global Challenges • Selective Breeding

Key Questions	1. How does scientists sample plant and animals? 2. How is human activity affecting the Earth's biodiversity 3. How do we produce genetically engineered organisms and how is this advantageous to the human race?	1. What is the role of the nervous system and the hormone system in the human body. 2. What is the role of hormones in reproduction. 3. How can hormones be used to treat infertility and prevent contraception. 4. How does the body control blood sugar levels.	1. How do diseases spread? 2. How do we stop disease spreading? 3. How does the body protect itself against disease? 4. How can vaccines be used to provide immunity to a disease? 5. How are new medicine discovered. Developed and tested for human use?	1. What is the link between lifestyle choices and some forms of non-communicable diseases? 2. How can non-communicable diseases be treated. 3. What are the advantages and disadvantage of organ transplants? 4. How can stem cells and gene therapy be used to treat diseases? 5. What are the ethical issues related to stem cells?	1. How do we digest food? 2. How do plants produce and store food? 3. Which factors have an impact on the rate of photosynthesis	1. Which processes help to transport substances across membranes? 2. How do plants transport water and what factors affect it? 3. What is the role of the nervous system and the hormone system in the human body?
Vocabulary	• Habitat • Identification key • Random sampling • Non-random sampling • Quadrat • Sample • Genetic engineering • Intensive farming • Selective Breeding	• Stimulus • Receptors • Effectors • Sensory neurones • Motor neurones • Relay neurons • Endocrine glands • Target organs • Hypothalamus • Thyroid Gland • Thyroxine. • Homeostasis. • Adrenaline • Ovulation • Follicle-stimulating hormone • Oestrogen	• Zone of inhibition • Vector • Antigens • Antiseptic • Antivirals • Aseptic technique • Clinical trial • Communicable disease • Contagious • Diagnosis • Disease • Droplet infection • Immunity • Incidence of a disease • Incubation period • Lymphocytes	• Cancer • Ethanol • Tar • Nicotine • Carbon monoxide • Particulates • High blood pressure • Statins • Antiplatelets • Beta blockers • Nitrates • Diabetes • Stent • Bone Marrow • Immunosuppressant • Gene therapy	• Chlorophyll • Endothermic • Limiting Factors • Photosynthesis • Light intensity Monomer • Enzyme • Active site • Gene • Metabolic rate •	• Antigens Chlorophyll • Endothermic • Limiting factors • Light Intensity • Diffusion • Osmosis • Concentration gradient • Water potential • Turgid • Plasmolysis • Flaccid • Lysis Xylem • Phloem • Translocation • Vascular Bundle • Transpiration

		• Luteinising hormone • Progesterone • Contraception • Fertility • In Vitro Fertilisation	• Antitoxins • Pathogen • Phagocytes • Placebo • Sterile • Vaccine	• Alleles • Target cell • Receptor		• Transpiration stream. • Stomata
Practical Skills	• B2 PAG – Sampling	• Investigating reaction rate	• Demonstrate the spread of disease • B5 Microbiology		• B1.2.4 Iodine & starch investigation / catalase & potato investigation • B1.4.2 Investigate Photosynthesis	• Investigate osmosis • Investigate transpiration